

Title (en)  
LITHIUM MANGANESE POSITIVE ELECTRODE ACTIVE MATERIAL HAVING SPINEL STRUCTURE, AND POSITIVE ELECTRODE AND LITHIUM SECONDARY BATTERY COMPRISING SAME

Title (de)  
LITHIUM-MANGAN-POSITIVELEKTRODEN-AKTIVMATERIAL MIT SPINELLSTRUKTUR UND POSITIVE ELEKTRODE UND DIESELBE UMFASSENDE LITHIUM-SEKUNDÄRBATTERIE

Title (fr)  
MATÉRIAU ACTIF D'ÉLECTRODE POSITIVE AU LITHIUM-MANGANÈSE COMPORTANT UNE STRUCTURE DE SPINELLE, AINSI QU'ÉLECTRODE POSITIVE ET BATTERIE SECONDAIRE AU LITHIUM LA COMPRENANT

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Application  
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Abstract (en)  
[origin: EP3609003A1] The present invention relates to a positive electrode material including a spinel-structured lithium manganese-based first positive electrode active material and a lithium nickel-manganese-cobalt-based second positive electrode active material, wherein the first positive electrode active material includes a lithium manganese oxide represented by Formula 1 and a coating layer which is disposed on a surface of the lithium manganese oxide and includes at least one element selected from the group consisting of Al, Ti, W, B, F, P, Mg, Ni, Co, Fe, Cr, V, Cu, Ca, Zn, Zr, Nb, Mo, Sr, Sb, Bi, Si, and S, the second positive electrode active material is represented by Formula 2, and an average particle diameter of the second positive electrode active material is greater than an average particle diameter of the first positive electrode active material, and a positive electrode and a lithium secondary battery which include the positive electrode material.  
[Formula 1]  $\text{Li}_{1+a}\text{Mn}_{2-b}\text{M}_{1-c}\text{O}_4$   
In Formula 1, M<sup>1</sup> is at least one element selected from the group consisting of Al, Li, Mg, Zn, B, W, Ni, Co, Fe, Cr, V, Ru, Cu, Cd, Ag, Y, Sc, Ga, In, As, Sb, Pt, Au, and Si, A is at least one element selected from the group consisting of F, Cl, Br, I, At, and S, 0 ≤ a ≤ 0.2, 0 < b ≤ 0.5, and 0 ≤ c ≤ 0.1.  
[Formula 2]  $\text{Li}_{1+x}\text{Ni}_y\text{Co}_z\text{Mn}_w\text{M}_{2-v}\text{O}_{2-p}\text{B}_p$   
In Formula 2, M<sup>2</sup> is at least one element selected from the group consisting of W, Cu, Fe, V, Cr, Ti, Zr, Zn, Al, In, Ta, Y, La, Sr, Ga, Sc, Gd, Sm, Ca, Ce, Nb, Mg, B, and Mo, B is at least one element selected from the group consisting of F, Cl, Br, I, At, and S, 0 ≤ x ≤ 0.3, 0.50 ≤ y < 1, 0 < z < 0.35, 0 < w < 0.35, 0 ≤ v ≤ 0.1, and 0 ≤ p ≤ 0.1.

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